In the Specification

Please replace the paragraph beginning at page 16, Line 11, with the following amended [marked-up] paragraph:

Table 1 below illustrates preferred DC fiber parameters in accordance with the invention that result in achievement of the desired properties. Parameters are illustrated in Table 1 for the ~~three~~ four segment designs listed above (having a three segment core and a fourth segment designated as cladding). Set forth are maximum $\Delta\%$ of each particular segment, as well as corresponding radii R_i. The cases in which the radius measurements are taken to the midpoint of a segment are labeled in the table heading. All other radii are the maximum outer radii of a given segment as well as the minimum inner radii of the next adjacent segment, where the segments are counted beginning with 1 (corresponding to the central core segment) and proceeding outward. These other radii are measured to the point where the profile crosses the cladding refractive index.

Listing of the Claims

1. **(currently amended)** A dispersion compensating optical fiber, comprising:

a segmented core having at least three segments, including a central core segment having an outer radius R_1 in the range of between about 1.5 μm and 2.0 μm, and a moat segment having an outer radius R_2 in the range of between about 4.5 μm and 6.5 μm, the refractive index profile being selected to provide

total dispersion at 1595 nm between about -95 ps/nm-km and -225 ps/nm-km; and

a dispersion slope more negative than -1.0 ps/nm^2-km at 1595 nm.

2. **(original)** The dispersion compensating optical fiber of claim 1 wherein the total dispersion at 1595 nm is between about -110 ps/nm-km and -150 ps/nm-km.

3. **(original)** The dispersion compensating optical fiber of claim 1 wherein the total dispersion is between about -80 ps/nm-km and -190 ps/nm-km over a wavelength range from about 1570 nm to 1620 nm.

4. **(original)** The dispersion compensating optical fiber of claim 1 wherein at least one of the segments has an α-profile where α is between about 2.0 and 2.2.

5. **(original)** The dispersion compensating optical fiber claim 1 wherein $\Delta_1\%$ is positive, $\Delta_2\%$ is negative, and $\Delta_3\%$ is positive.

6. **(currently amended)** The dispersion compensating optical fiber of claim 5 ~~further comprising a~~ wherein the ~~central core segment having has positive~~ $\Delta_1\%$ greater than 1.5%, ~~a moat segment adjoining the central core segment and having a negative~~ $\Delta_2\%$ more negative than –0.4%, and a ring segment adjoining the moat segment having a positive $\Delta_3\%$ greater than 0.7%.

7. **(original)** The dispersion compensating optical fiber of claim 5 wherein a volume of the central core segment is in the range of about 9 units and 11 units, and a volume of the ring segment is in the range of about 40 units to 47 units.

8. **(currently amended)** The dispersion compensating optical fiber of claim 1 ~~further comprising:~~ wherein

~~a~~ the central core segment ~~having~~ has a $\Delta_1\%$ in the range of about 1.5% to 2.0% ~~and a radius R_1 in the range of about 1.5 μm to 2.0 μm~~,

~~a~~ the moat segment ~~having~~ a $\Delta_2\%$ in the range of about -0.3% to -0.9% ~~and a radius R_2 in the range of about 4.5 μm to 6.5 μm~~, and

a ring segment having a $\Delta_3\%$ in the range of about 0.6% to 1.1%, a mid point radius R_3 in the range of about 6.0 μm to 8.0 μm.

9. **(currently amended)** The dispersion compensating optical fiber of claim 1 further comprising:

~~a~~ the central core segment having a positive $\Delta_1\%$ greater than 1.7%,

~~a~~ the moat segment adjoining the central core segment having a negative $\Delta_2\%$ more negative than –0.5%, and

a ring segment adjoining the moat segment having a positive $\Delta_3\%$ greater than 0.8%.

10. **(currently amended)** The dispersion compensating optical fiber of claim 1 further comprising a ring segment having a volume of the ring segment greater than about 40 units.

11. **(original)** The dispersion compensating optical fiber of claim 1 further comprising a ring segment having $\Delta_3\%$ of greater than 0.7%.

12. **(original)** The dispersion compensating optical fiber of claim 11 further comprising a $\Delta_3\%$ of the ring segment between 0.7% and 1.0% and a midpoint radius R3 between 6.5 μm and 8.0 μm.

13. **(currently amended)** The dispersion compensating optical fiber of claim 1 ~~further comprising:~~ wherein

~~a~~ the central core segment ~~having~~ has a $\Delta_1\%$ in the range of about 1.7% to 1.9% and ~~a~~ the radius R_1 in the range of between about 1.7 μm to 1.9 μm,

~~a~~ the moat segment ~~having~~ has a $\Delta_2\%$ in the range of about –0.5% to -0.7% and ~~an~~ the radius R_2 ~~of~~ is between 5.0 μm and 6.0 μm, and

a ring segment having a $\Delta_3\%$ in the range of about 0.75% to 0.9%, a midpoint radius R_3 in the range of about 6.5 μm to 8.0 μm, and a width in the range of about 0.7 μm to 1.2 μm.

14. **(original)** The dispersion compensating optical fiber of claim 1 further including a kappa value defined as the dispersion at 1595 nm divided by the dispersion slope at 1595 nm of between 90 nm and 110 nm.

15. **(original)** The dispersion compensating optical fiber of claim 1 further including a kappa value defined as the dispersion at 1595 nm divided by the dispersion slope at 1595 nm of between 90 nm and 105 nm.

16. **(original)** The dispersion compensating optical fiber of claim 1 further including a kappa value defined as the dispersion at 1595 nm divided by the dispersion slope at 1595 nm of between 95 nm and 100 nm.

17. **(original)** The dispersion compensating optical fiber of claim 1 further comprising a range of kappa values defined as the dispersion at a particular wavelength divided by the dispersion slope at the particular wavelength over the range of 1570 nm to 1620 nm of between 80 nm to 155 nm.

18. **(original)** The dispersion compensating optical fiber of claim 17 further comprising a range of kappa values defined as the dispersion at a particular wavelength divided by the dispersion slope at the particular wavelength over the range of 1570 nm to 1620 nm of between 85 nm to 110 nm.

19. **(currently amended)** The dispersion compensating optical fiber of claim 1 further comprising a pin array of less than 7 dB at 1595 nm wound on ten 0.67 mm diameter pins spaced 5 mm center to center.

20. **(original)** The dispersion compensating optical fiber of claim 1 further comprising a cutoff wavelength for a next higher order mode above LP_{01}, the cutoff wavelength being less than 2025 nm.

21. **(original)** The dispersion compensating optical fiber of claim 1 further comprising an effective area at 1595 nm of greater than 15 μm^2.

22. **(original)** The dispersion compensating optical fiber of claim 21 further comprising an effective area at 1595 nm of greater than 17 μm^2.

23. **(original)** The dispersion compensating optical fiber of claim 1 further comprising an dispersion slope over the wavelength range of between about 1570 nm and 1620 nm of between –0.7 ps/nm^2-km and –2.5 ps/nm^2-km.

24. **(original)** The dispersion compensating optical fiber of claim 23 further comprising an dispersion slope over the wavelength range of between about 1570 nm and 1620 nm of between -1.0 ps/nm^2-km and –1.8 ps/nm^2-km.

25. **(original)** The dispersion compensating optical fiber of claim 1 further comprising an dispersion slope at 1595 nm of between -1.0 ps/nm^2-km and –2.5 ps/nm^2-km.

26. **(original)** The dispersion compensating optical fiber of claim 1 further comprising an dispersion slope at 1595 nm of between -1.2 ps/nm^2-km and -1.5 ps/nm^2-km.

27. **(original)** The dispersion compensating optical fiber of claim 1 further comprising an dispersion slope at 1595 nm more negative than -1.2 ps/nm^2-km.

28. **(original)** The dispersion compensating optical fiber of claim 1 further comprising dispersion slope that is more negative than –0.7 ps/nm^2-km over the entire L-band from 1570 nm to 1620 nm.

29. **(original)** The dispersion compensating optical fiber of claim 28 further comprising a dispersion slope that is more negative than –1.2 ps/nm^2-km over the entire L-band from 1570 nm to 1620 nm.

30. **(canceled)**

31. **(currently amended)** The dispersion compensating optical fiber of claim ~~30~~ 1 further comprising a ring segment having ~~a~~ an outer radius R_4 of the ring segment in the range of between about 10 μm and 12 μm.

32. **(currently amended)** An optical transmission system having a dispersion compensating optical fiber, wherein the dispersion compensating fiber comprises:

a segmented core having at least three segments, including a central core segment having an outer radius R_1 in the range of between about 1.5 μm and 2.0 μm, and a moat segment having an outer radius R_2 in the range of between about 4.5 μm and 6.5 μm, the refractive index profile being selected to provide

total dispersion at 1595 nm between about -95 ps/nm-km and -225 ps/nm-km; and

a dispersion slope more negative than -1.0 ps/nm^2-km at 1595 nm.

33. **(original)** The optical transmission system of claim 32 further comprising a non-zero dispersion shifted fiber coupled to the dispersion compensating fiber, the non-zero dispersion shifted fiber having a dispersion slope of between about 0.065 and 0.08 ps/nm^2-km at 1595 nm.

34. **(original)** The optical transmission system of claim 33 wherein the non-zero dispersion shifted fiber has a dispersion of between about 6.5 and 8.5 ps/nm-km at 1595 nm.

Remarks

In view of the above amendments and the following remarks, favorable reconsideration of the outstanding office action is respectfully requested. Upon entry of this amendment, claims 1-29 and 31-34 will remain in this application. Claims 1, 6, 8-10, 13, 19, 31 and 32 have been amended herein. Claim 30 is canceled herein.

1. Specification

The Examiner has objected to the specification because (on page 16) it indicates that the fiber was a three segment design contrary to what is illustrated in Table 1. To further clarify the issue, the fiber disclosed in the application is comprised of a three segment core and a fourth segment which is the cladding. The specification has been corrected as appropriate. No new matter is added. Accordingly, the objection should be withdrawn.

2. Claims Objections

The Examiner has objected to claims 19 and 31. Claim 19 is objected to because the pin spacing was lacking. Further language characterizing the pin array test has been added to claim 19. Further, claim 31 was objected to by the Examiner because of a clerical error therein. Claims 31 has been amended to correct this error. No new matter has been added. Accordingly, the objections to claims 19 and 31 should be withdrawn.

3. Obviousness-Type Double Patenting Rejections

The Examiner has provisionally rejected claims 1-2, 4-14 and 29-34 under the judicially-created doctrine of obviousness-type double patenting over certain claims in co-pending application 10/238,100.

Respectfully, the rejection of the claims is traversed. Regarding the obviousness-type double patenting rejection, Applicants provide herewith a terminal disclaimer disclaiming the terminal portion of 10/238,100 that, if issued, would extend beyond the any patent issued on the present application. Accordingly, the obviousness-type double patenting rejection should be withdrawn.

4. Conflicting Patent Claims

The Examiner has rejected claims 1-2, 4-24 and 29-34 of this application as being in conflict with certain claims in 10/238,100. Applicant has been requested to cancel conflicting claims from all but one application to present a clear line of demarcation between the cases.

As amended, the claims in the present application no longer conflict with the claims in 10/238,100 in that the claims include a combination of elements not claimed in 10/238,100. Further, to the extent the claims in each case may be obvious variants of each other, a terminal disclaimer is provided herewith. Accordingly, the rejection based upon conflicting claims should be withdrawn.

5. § 102 Rejections

The Examiner has rejected claims 1, 4-15, 17-19, 23-25 and 27-34 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,490,398 (the Gruner-Nielsen '398 patent). The Examiner asserts that Gruner-Nielsen '398 teaches a dispersion compensating optical fiber having at least three segments and a refractive index profile selected to provide total dispersion between -95 and -225 ps/nm/km at 1595 nm and a dispersion slope of less than -1.0 ps/nm^2/km at 1595 nm (See Fig. 4 and Col. 8, Fiber C).

Respectfully, the rejection of claim under 102(e) is traversed. In particular, Examiner should note that in present claim 1, dispersion is given at 1595 nm (not at 1550 nm). For the fiber type described in Gruner-Nielsen '398, there is a significant difference in dispersion and slope at 1595 nm versus 1550 nm. In Fig. 4 of Gruner-Nielsen '398, it is readily apparent that dispersion at 1595 nm is about -240 ps/nm/km, while it is about -146 ps/nm/km at 1550 nm. In the additional examples given in Gruner-Nielsen '398, for example, Examples A and B have dispersion slopes greater than (not less than) -1.0 ps/nm/km and Example C has dispersion of about -260 ps/nm/km at 1595 nm (also outside the claimed range). Thus, none of the examples in Gruner-Nielsen '398 teach or suggest a dispersion compensating fiber having the combination of dispersion and dispersion slope properties claimed in the present application (at 1595 nm).

In particular, Gruner-Nielsen '398 does not teach or suggest a dispersion compensating fiber having a three segment core and a dispersion at 1595 nm of between about -95 and -225 ps/nm/km and dispersion slope at 1595 nm less than -1.0 ps/nm^2/km. As such, the 102(e) rejection of claims 1, 4-15, 17-19, 23-25, and 27-34 based upon Gruner-Nielsen '398 is inappropriate, and should be withdrawn.

The Examiner has further rejected claims 1-3, 16, 20-22 and 26 under 35 U.S.C. § 102(e) as being anticipated by Okuno (U.S. Patent No. 6,501,892). The Examiner asserts that Okuno '892 teaches a dispersion compensating optical fiber having at least three segments and a refractive index profile selected to provide total dispersion between -95 and -225 ps/nm/km at 1595 nm and a dispersion slope of less than -1.0 ps/nm^2/km at 1595 nm (See Fig. 10, C100).

Respectfully, the rejection of claim under 102(e) is traversed. Although, as shown in Fig. 10 of Okuno '892, the dispersion at 1595 nm is about -160 ps/nm/km, while the slope at 1595 nm is about -2.6 ps/nm^2/km resulting in a kappa of about 61 nm at 1595 nm, the structure of the present invention dispersion compensating fiber is not taught or suggested in Okuno '892. In particular, Okuno '892 does not teach or suggest a fiber having the core structure having at least three segments, including a central core segment having an outer radius R_1 in the range of between about 1.5 μm and 2.0 μm, a moat segment having an outer radius R_2 in the range of between about 4.5 μm and 6.5 μm, in combination with a total dispersion at 1595 nm between about -95 ps/nm-km and -225 ps/nm-km; and a dispersion slope more negative than -1.0 ps/nm^2-km at 1595 nm. Accordingly, since Okuno '892 reference does not teach the claimed structure, the rejection is flawed and should be withdrawn.

6. Conclusion

Based upon the above amendments, remarks, and papers of record, Applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests reconsideration of the pending claims 1-29 and 31-34 and a prompt Notice of Allowance thereon.

Applicant believes that a one month extension of time is necessary to make this Response timely. Should Applicant be in error, Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Randall S. Wayland at 607-974-0463.

Respectfully submitted,

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